REMARKS

Claims 1-8 are now pending in the application. No claims have been amended herein. The following remarks are believed to be fully responsive to the outstanding Office Action and are believed to place the application in condition for allowance. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Vasileiadis et al (U.S. Pat. No. 6,919,062; hereafter Vasileiadis) in view of Kato et al (U.S. Pat. Pub. No. 2004/0157099; hereafter Kato). This rejection is respectfully traversed.

Applicant submits that neither Vasileiadis nor Kato render obvious claim 1 because neither Vasileiadis nor Kato teach or suggest a "fuel cell system... comprising: a fuel cell stack including a plurality of proton exchange membranes... and a plurality of coolant passages extending between adjacent ones of said plurality of proton exchange membranes; and a conduit in fluid communication with said coolant passages... and comprising a first layer of hydrogen-permeable material," as recited in claim 1.

Vasileiadis discloses feed gases flowing through a permreactor-separator, yielding a hydrogen-based gas that can be supplied to an anode side of a fuel cell stack (Abstract, Fig. 11). Vasileiadis further discloses the permreactor-separator comprising a hydrogen permeable tube (col. 3, line 65 to col. 4, line 9). As the Examiner acknowledges, Vasileiadis does not disclose coolant passages passing between the

membranes of the fuel cell. In addition, Vasileiadis does not disclose the permreactor-separator comprising a hydrogen permeable tube in fluid communication with coolant passages.

The Examiner cites Kato for teaching coolant passages between the membranes of fuel cells. The Examiner also asserts that it would have been obvious to employ the cooling arrangement of Kato in the fuel cell of Vasileiadis in order to control stack temperature and reactivity between the cells. However, Kato does not teach or suggest a conduit in fluid communication with coolant passages and comprising a first layer of hydrogen-permeable material, as claimed.

In addition, Applicant submits that the modifications of Vasileiadis suggested by the Examiner are impermissible hindsight reconstruction of the claimed fuel cell system. "To reach a proper determination under 35 U.S.C. 103... impermissible hindsight must be avoided and the legal conclusion [of obviousness] must be reached on the basis of the facts gleaned from the prior art." MPEP §2142. Neither Vasileiadis, nor Kato, nor a combination thereof teach or suggest a conduit in fluid communication with coolant passages and comprising a first layer of hydrogen-permeable material, as claimed.

Moreover, Applicant notes that claim 2 recites the "fuel cell system of claim 1 further comprising a support layer" and claim 3 recites the "support layer is breathable to enable passage of said hydrogen to atmosphere." Vasileiadis discloses a far outer impermeable tube/shell (7) that prevents passage of hydrogen to atmosphere. (Fig. 1) Vasileiadis does not disclose a support layer that is breathable to enable passage of hydrogen to atmosphere, as claimed.

Furthermore, Applicant submits that any modification of the permreactor-separator of Vasileiadis to include a support layer that is breathable to enable passage of hydrogen to the atmosphere would render the permreactor-separator of Vasileiadis unsatisfactory for its intended purpose. The purpose of the permreactor-separator of Vasileiadis is to capture a final exit stream, such as hydrogen-based gas, for use in hydrogen driven fuel cell or direct chemical synthesis. (Abstract). Thus, modifying the permreactor-separator of Vasileiadis to include a support layer that is breathable to enable passage of hydrogen to the atmosphere would defeat the purpose of capturing hydrogen for use in a hydrogen driven fuel cell or direct chemical synthesis.

Accordingly, the prior art fails to teach or suggest all of the limitations of claims 1 and 3. In addition, claims 2-8 depend from claim 1 and should be patentable for the reasons set forth above supporting the patentability of claim 1. Therefore, reconsideration and withdrawal of the rejection of claims 1-8 are respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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